

rally been regarded as an accidental circumstance due to the use of copper utensils in the preparation of food. M. S. Cloez, of Paris, recently examined the blood of a roebuck shot in the forest of Essarts, and found copper oxide present to the extent of $5\frac{1}{2}$ milligrammes per kilogramme of blood. As this result would tend to show that copper is a normal constituent of the blood, the question which next awaits solution is that of the method of its entrance into the animal system.

THE RESPIRATION OF PLANTS.—We have already noticed the investigations undertaken by Prof. Borodin on the processes of respiration in plants. We find in the seventh volume of the *Memoirs* of the St. Petersburg Society of Naturalists the paper of Prof. Borodin in full, accompanied by a series of graphic representations, by means of curves, of his important measurements. We cannot attempt here to give a *résumé* either of the varied experiments made by the author or of the important questions arising from Prof. Borodin's inquiry, and discussed by him. As to the experiments themselves, we can only state that the reader will find in the paper a thorough discussion of their value and of the value of various methods used for the study of the subject. The main result is that in darkness the energy of respiration of a branch gradually decreases; a temporary action of light, however, increases it, this increase being mostly the result of the influence of the less refrangible rays (red, &c.), and it takes place only when the surrounding air can supply the plant with a sufficient amount of carbonic acid. The decrease of energy of respiration is caused by the decrease of the stock of starch in the plant, and the increase under the influence of light takes place because of the formation, under this influence, of a new stock of starch. Thus, other conditions remaining the same, the energy of respiration depends upon the existence in the branch of non-nitrogenous plastic substance; this is the material for respiration, the exhaled carbonic acid being the result of oxidation of a certain part of non-nitrogenous organic matter. While following the author in his discussion of this subject and of the opinions of Garreau, Pflüger, and Sachs, we further notice the importance of a fresh supply of oxygen in the atmosphere surrounding the plant as resulting from M. Borodin's experiments and the contributions they make to the most important and yet very obscure question as to the influence of temperature upon respiration. These important questions will be the subject of further studies, which the author proposes to continue for many years.

A TASMANIAN CARNIVOROUS PLANT.—Dr. B. Crowther, of Campbell Town, Tasmania, writing to *The Mercury* (Hobart Town), November 26, 1876, states that he was furnished with a plant which grows on rocky ground, whose crevices contain rich organic soil, different from the peaty soil Darwin's grew in. It is quite obvious, he states, on careful examination, that the plant lives to a great extent off the small flies and gnats it obtains. It is about six inches in height, and from its single vertical stem project from one to two dozen small foot-stalks, at irregular and variable distances. On the summit of each foot-stalk is a rounded disc, placed horizontally, about half an inch in circumference, fringed with tentacles of different sizes. In the centre is a hollow, with small fine filaments projecting vertically; on the ends of both the filaments and also tentacles are little reddish glands which secrete a sticky substance. The fly rests on the outer zone, is conveyed by the sticky tentacles to the centre, which at once closes upon the victim so tightly that a bulging may be seen corresponding to the fly inside. After it has been consumed, the trap again opens, showing the *débris* of the fly, which are doubtless washed away by the rain, so as to allow the trap to again set for another victim. The plant described by Dr. Crowther is evidently *Drosera peltata*, Smith, a well-known Australian species (in herbaria). It is not referred to by Mr.

Darwin in his work on "Insectivorous Plants;" and any more exact information respecting its habits of life, and the mode in which it captures insects would be a very useful addition to our knowledge of these plants, especially if accompanied by drawings.

BOTANY OF NEW GUINEA.—The distinguished Italian naturalist and traveller, Dr. Beccari, has commenced the publication of a new illustrated work called "Malesia," for the purpose of bringing before the scientific world his numerous botanical discoveries in New Guinea and the Eastern Archipelago. The first number of "Malesia" has just been issued at Genoa, and is occupied with an article upon the palms of New Guinea and the adjacent islands. Fifty species of palms were collected by Dr. Beccari in these countries, many of which were previously unknown.

NOTES

MR. C. J. LAMBERT has presented to the Chemical Society 1,000*l.* and to the Royal Microscopical Society, 500*l.*, from a bequest of 25,000*l.* left by his late father, to be appropriated to benevolent and scientific purposes.

WE regret to learn that Prof. M'Crary who, on the death of Prof. Agassiz, succeeded to the Chair of Zoology in Harvard College, has found it necessary to tender his resignation to the authorities of the University. This step is all the more to be lamented as judging from the terms of the resignation, which we have read, it has been caused by a desire on the part of Prof. M'Crary to raise the standard of zoological education in the college to a higher level than was deemed advisable by the authorities. We hope that some means may be found of retaining Prof. M'Crary's services to the University. He is well known as an eminent original worker in an important department of zoological research.

WE regret to announce the death of a Russian geologist, Prof. N. P. Barbot-de-Marny. Having begun his scientific work in 1852, taking part in Hoffmann's exploration of the Ural, M. de Marny continued until 1876 his valuable work of the geological exploration of Russia. He explored the Kuma-Manych depression, the provinces of Archangel, Vologda, Volhynia, Podolia, and Kherson, and all the lines of railway radiating from Moscow, as well as those of Kief, Azov, Tsaritsin, Orenburg, and Caucasus. In 1874 he took an active part in the difficult exploration of the Aral-Caspian expedition and explored the Amu-Darya. The *Mines Journal* and the *Memoirs* of the Mineralogical and Geographical Societies, as well as those of the St. Petersburg Society of Naturalists, one of the presidents of of which he was for a long time, contain about 110 of his valuable papers, besides which he was the author of some important volumes. His "Formation Stage" was an important addition to our knowledge of the Tertiary of South-eastern Europe. He died at the age of forty-five, leaving a family, a library of books, many MSS., and—no money.

THE President of the Royal Academy is always very catholic in his invitations to the annual dinner, certainly one of the chief events of the London year. On Saturday last science was largely and well represented, and Dr. Hooker, in his reply to the toast of Science, happily performed what at first sight would seem a hard task under the circumstances. Dr. Hooker showed that the incongruity between art and science was only apparent; that art lends valuable aid to science, and that all true art must really be based on scientific principles; and that moreover the two have this in common, that success is unattainable in neither unless by close observation, enthusiasm, and the skilful exercise of the imagination. Some may be inclined to think that the new Grosvenor Gallery is more scientific in its method of selection

than the much maligned Academy, but then the objects of the two are very different. At all events the man of science will be furnished with much food for thought and wonder in both. What seems to be generally regarded as the masterpiece in the Grosvenor, Mr. Burne Jones's "Six Days of Creation," may remind geologists of Hugh Miller's famous phantasy, written in the old "reconciliation" days. However this may be, its conception and execution are deserving of study from many points of view, including even the scientific.

THE great Museum of Applied Sciences in Moscow will be opened on June 11, the birthday of Peter the Great. The building is ready and the collections have been brought in. It has cost up to the present time half a million of roubles, occupies a space of 13,633 square yards, and is divided into three blocks. Besides spacious rooms for collections in applied science, it contains a large and well-ventilated auditory. Eleven scientific societies will hold their sittings in the Museum.

THE foundation of a permanent station for help to wrecked vessels on Novaya Zemlya is now in way of execution. We hope that the station will also be used for taking regular meteorological observations. An Eskimo family, which has already wintered for two years on the island, will remain there permanently, and be supplied by the Russian Government with all necessities.

PROF. LEITH ADAMS has commenced a course of six lectures on the "Distribution of Animals as elucidating Past Changes of the Earth's Surface," in the Royal College of Science, Dublin.

A PRIZE OF 10*l.*, which has been placed at the disposition of the Council by Col. A. A. Croll, is offered by the Society of Arts, with the Society's Silver Medal, for the best set of Blow-pipe apparatus which shall be sold retail for one guinea. All apparatus for competition must be sent to the Society's house on or before August 1, 1877. Details will be found in the *Journal* of May 4.

THE Prince of Wales, in company with Mr. Cunliffe Owen, Col. Ellis, Lord Suffield, and M. Blowitz, visited the works of the Paris International Exhibition at the Champ de Mars and Trocadero, last Saturday. He was received by M. Krantz, Director of the Exhibition, the Minister of Trade, and some officials. The Prince of Wales was much pleased with the state of the works, which are progressing so rapidly that it is now possible to have a view of the buildings covering so large a space. He selected a space for the special exhibition of objects which he brought back with him from his tour in India.

IN the current number of *Mind*, Mr. G. H. Lewes gives briefly what seems to be one of the chief positions taken by him in his new volume "The Physical Basis of Mind." He finds that according to usage the word "consciousness" is equivalent to sentence or feeling; that it is also used in a special sense as signifying that we not only feel, but feel or are conscious that we feel. Now Mr. Lewes holds that every neural process implies sensibility, indeed *is* feeling or consciousness in the general sense of that term; accordingly consciousness, sentence—these neural processes may be said to have "various modes and degrees—such as perception, ideation, emotion, volition, which may be conscious, sub-conscious, or unconscious." In the last sentence the word "unconscious" describes a mode or degree of sentence which has not given rise to consciousness in the special sense, and Mr. Lewes contends that the word "unconscious" ought to be confined to this usage, that in strictness we should not speak of unconsciousness outside the sphere of sentence. He then proceeds to argue that to describe a neural process as a mere series of physical changes is to say that "organic processes suddenly cease to be organic and become purely physical

by a slight change in their *relative* position in the consensus." The matter of fact of which Mr. Lewes has to persuade his readers is, that "the reflex mechanism necessarily involves sensibility," that a neural process is a *feeling*.

SIX years ago Dr. Maudsley contended against the popular opinion that insanity was on the increase in this country, the rapid increase of the registered insane being open to a less gloomy explanation. It is gratifying to find that Dr. Maudsley can in the current number of the *Journal of Mental Science* still maintain with every appearance of truth, that there is no evidence of an increased production of insanity in this country.

AT a recent meeting of the Chemical Section of the Society of Arts, Dr. B. H. Paul read a paper on "The Cinchona Alkaloids, their Sources, Production, and Use," in which he traced the history of the cinchonas from the early part of the seventeenth century to their successful cultivation in India and other countries. The chemistry of the cinchona barks is a point about which but little is popularly known. It would seem that a considerable amount of cinchonidine, one of the several alkaloids found in cinchona barks, is often mixed with the sulphate of quinine of commerce, sometimes, indeed, exceeding ten per cent., and though the medicinal efficacy of the quinine is not materially impaired by this mixing, a great difference is made in the intrinsic value, cinchonidine being worth not more than one-eighth as much as quinine. Considering the present high price of quinine, it is pleasant to be told by Dr. Paul that "the sulphate of cinchonidine has been proved to be very little inferior in efficacy—for certain kinds of maladies—to quinine," the price of this alkaloid being two or three shillings an ounce against sixteen shillings for quinine.

M. JABLOSKOW, a Russian electrician, has exhibited before the Physical Society of Paris a new process for producing electric light. The voltaic arc is quite suppressed and a current is sent merely through a plate of caolin, which ignites and fuses gradually, giving out a magnificent steady light. The transverse dimension which the current is able to warm and ignite varies according to the force of the battery. M. Jablonskow made a most interesting experiment. Cutting in two parts a plate of caolin which had been used for giving a light, he raised two separate lights with the same current. The light given by these two plates was found equal to the light which had been given a few minutes previously. The experiment was considered by all present to be a great success. Experiments on a large scale will be shortly tried at the large hall of the Magasin du Louvre. The generator of electricity was an induction machine of the Alliance type worked by two men.

AT the last meeting of the Russian Geographical Society M. Wojeikof reported upon his last journey in Japan. He started from Hakodadi and visited the Ainos of Jesso Island; he then went to Aomori, in the northern part of Nipon, and travelled to Jeddo, crossing Nipon Island three times from west to east. The northern part of the island is not populous, only the high valleys being settled. The climate of the western shores of Japan is far milder than is generally supposed, the tea-tree reaching here as far as 40° north latitude. The most important result of the journey is the measurement by barometer of the heights of about 600 places.

RUSSIAN newspapers announce that our countryman, Mr. Harvey, after having stayed for three days in St. Petersburg, continued his journey for the zoological exploration of the Pechora region. He is accompanied by a painter and a zoological collector.

THE last number of the *Izvestia* of the Russian Geographical Society announces that the south-western branch of the Society,

established at Kief, is closed by Imperial Order for political reasons.

THE same periodical gives some information as to the journey made last summer by Capt. Pevtsov with a Cossack detachment which protected the caravan with corn, sent by Russian traders from the Lake Zaisan, *via* Bulun-Tokhoi, to the Chinese town Gu-chen (Dzungaria, N. lat. $43^{\circ} 50'$, E. long. $90^{\circ} 14'$). The results of this journey are,—a survey of the route, 560 miles long, with maps of the towns, astronomical determinations of the positions of seven points, magnetical observations, barometrical measurements of heights, a complete geological exploration along the route, a collection of about 1,000 species of plants, and a zoological collection numbering 34 mammalia and 123 birds.

THE Geological Survey of Finland, which was undertaken on the scheme of that of Sweden, but was interrupted in 1868, will be continued this year.

A TELEGRAM received by the St. Petersburg Academy of Sciences, announces that the mammoth found in the neighbourhood of Tomsk is very well preserved. A piece of its flesh with fat has been forwarded to the Academy, which, as we learn from a private source, proposes to send M. Poliakov for the exploration of the remains.

THE Russian Geographical Society has undertaken the publication of an historical sketch of geographical explorations in Northern Asia, with accounts of all expeditions, an index of works on Northern Asia, and a map showing the routes followed by all important exploring parties. The work will appear in 1879, that year being the tercentenary of the crossing of the Ural Mountains by Yermak, the conqueror of Siberia.

In a recent communication to the Belgian Academy, M. van Monckhoven describes some improvements in the photographic reproduction of ultraviolet spectra of gases. He employs two large Geissler tubes placed parallel and communicating together by a capillary tube at right angles to them. The spectroscopic consists of three 60° prisms of Iceland spar, cut so that the bisector plane of each of their dihedral angles is parallel to the optic axis of the crystal. With such prisms the ordinary and extraordinary spectra do not encroach on one another. The axis of the capillary tube is then made to coincide exactly with that of the collimator of the spectroscope, and the intensity of the light, which can be utilised during passage of the current from a Ruhmkorff coil, is found to be very much greater than if the tube were placed, as usual, perpendicularly to the axis of the apparatus. The author recommends using a plate of quartz in place of one of the large tubes of glass, so as to prevent too great absorption of rays of high refrangibility. To give an idea of the exactness with which even the most refrangible bright lines are reproduced, M. van Monckhoven presented three plates representing the solar spectrum, the bright lines of hydrogen combined with those of aluminium (of which the electrodes were formed), and the bright lines of a solar protuberance.

WE have received from Prof. E. S. Holden, of the United States Naval Observatory, a list compiled by him of the principal telescopes in the possession of public institutions and private individuals. The list, though imperfect, is a long one, and we regret that the pressure on our space prevents us from printing it. Those who would like to possess it will find it in the *Popular Science Monthly* for March. Among reflectors we notice that Lord Rosse's is still unsurpassed; it has an aperture of 6 ft. and a focal length of 55 ft. Mr. Ellery's, of Melbourne, has a 4 ft. aperture and a focal length of 32 ft.; that of the Paris Observatory an aperture of 1.20 metre and a focal length of 7 metres. Of refractors the two largest are now constructing;

that for Yale College Observatory (by Clark and Sons) will have an aperture of 28 in., and the one for Vienna, constructed by Grubb, an aperture of 27 in. The refractor belonging to Mr. Newall, of Gateshead, has an aperture of 25 in. and a focal length of 29 ft.; the corresponding dimensions of the Pulkowa refractor are 14.93 in. and 270.6 in.; Lord Lindsay's, 15 in. and 15 ft.; that of Greenwich, 12.5 in. and 16.6 ft.; the largest in the Paris Observatory, 12 French in. and 5 metres; Rutherford's, of New York (a photographic refractor), an aperture of 10.5 French in.; Secchi, of Rome, 7.5 French in., and 14 French ft. Altogether Prof. Holden enumerates upwards of 140 telescopes that are at work on the heavens, and remarks, with some justice, that "it is a melancholy fact that the return from so many instruments is not so great as it should be, and it suggests the question as to whether future benefactors will not do better to provide astronomers to use the telescopes already constructed than observatories in which to put new ones."

To those who take a practical interest in the ventilation of houses we would recommend a pamphlet by Mr. James Curtis, C.E., entitled "Fresh Air in the House, and How to Secure It" (Ward, Lock, and Tyler). Mr. Curtis has evidently studied the important subject of ventilation carefully, and his practical suggestions will be found useful to those anxious to secure a regular supply of fresh air in their houses.

IN the note on Mr. Shrubsole's discovery (vol. xv. p. 561), the word *chalk* should be *chert*.

THE additions to the Zoological Society's Gardens during the past week include two Green-winged Doves (*Chalcophaps indica*), a Hamilton's Terrapin (*Clemmys hamiltoni*) from India, presented by Mrs. M. A. Moore; three Water Ouzels (*Cinclus aquaticus*), European, presented by Mr. G. B. Davies Cooke; an Indian Python (*Python molurus*) from India, presented by Mr. C. A. F. Powell; six River Lampreys (*Petromyzon fluviatilis*) from British Rivers, presented by Mr. A. H. Cocks, F.Z.S.; a Virginian Deer (*Cervus virginianus*) from North America, a Rock Cavy (*Ceraton rupestris*) from South America, deposited; two Raccoon-like Dogs (*Nyctereutes procyonides*), four Common Foxes (*Canis vulpes*) born in the Gardens.

UNIVERSITY INTELLIGENCE

OXFORD.—An examination will be held at St. John's College on Tuesday, June 12, and the two following days, to elect two Foundation Scholarships for Classics, and to the Holmes Scholarship, which will be given for Natural Science. The subjects of examination in Natural Science will be Chemistry and Physics; there will be also a pass paper in Classics; there is no restriction of age. The scholarship is tenable for five years, and is of the value of 100*l.* per annum.

The Boden Professor of Sanskrit (Mr. Monier Williams) proposes to give two public lectures (open to all members of the university and their friends) in the large lecture room of the museum, on Wednesday, May 23, and Wednesday, May 30, at three P.M. The subject will be "The Sacred Places, Religious Creeds, and Superstitions of Southern India and Ceylon," and the lectures will be illustrated by diagrams and objects of interest (including a model of the Parsee Towers of Silence) brought from India.

CAMBRIDGE.—The "Rede" Lecture will be delivered in the Senate-house on Friday, May 25, at half-past two in the afternoon. The lecturer is Sir C. Wyville Thomson, and the subject of the lecture will be "On some of the Results of the Expedition of Her Majesty's ship *Challenger*."

LONDON.—At Tuesday's Convocation of the University of London a resolution was proposed thanking the Senate for their decision to admit women to degrees in medicine. To this an amendment was moved that it was undesirable to take this course before the House had considered the advisability of admitting women to degrees in all faculties. This was carried on a division